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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,741	10/04/2000	Tadahiro Ohmi	PM 274025 EL00009CDC	9698

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EXAMINER

CROWELL, ANNA M

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/06/2002

60

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,741

Applicant(s)

OHMI ET AL.

Examiner

Michelle Crowell

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- * 1) ☒ Responsive to communication(s) filed on Augst 23, 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-20 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 4-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation, "wherein said lattice-like shower plate is formed of a metal pipe comprising a plurality of gas discharge holes configured and arranged such that the process gas is obliquely incident on the surface of the substrate" which is indefinite.

1. How can a lattice-like shower plate be formed of a metal pipe? A plate and a pipe are two distinctively, different structures.
2. How are the gas discharge holes positioned? The claim only requires that the process gas is obliquely incident on the surface of the substrate.
3. Is the lattice-like shower plate made of multiple pipes (Figure 2)?

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Otani et al. (Japanese Patent Publication 06-260434) in view of Hama et al (U.S. 5,525,159),

Art Unit: 1763

Oyama (Japanese Patent Publication 02-237020), and Omi et al. (Japanese Patent Publication 11-302824).

Referring to Drawing 1 and paragraphs [0023] – [0027], [0030]-[0031], Otani discloses a plasma CVD device used to enhance plasma stability, control film composition ratio, increase the film forming rate, and reduce damage to the substrate surface. The device comprises a vacuum housing 4 (chamber), gas supply system 40 and 46, exhaust port 6, RF electrode 8 (flat plate dielectric material shower plate) with a plurality of holes 10, electrode holder-cum-the electrode 18 for holding the substrate, and a bipolar electrode 30 (lattice-like shower plate) with holes 34 (openings). The bipolar electrode 30 is located between the shower plate and the substrate and is supplied with a different gas through inlet 40. In addition, the bipolar electrode 30 can be grounded.

Otani fails to teach an antenna, flat plate dielectric material plate, lattice –like shower plate formed of a metal pipe, stainless steel metal pipe, and an aluminum oxide layer.

Referring to Figure 1, and column 6, lines 28-50, Hama teaches a plasma CVD apparatus for forming a silicon film on an LCD substrate. The apparatus is divided into an upper chamber 18 and a process chamber 16 by a dielectric partition plate 14. On the outside of the dielectric partition plate 14 and process chamber 16, antenna 102 is placed to generate an electromagnetic field between the partition plate and the substrate. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Otani with an antenna with a dielectric plate located outside the chamber as taught by Hama. This would enhance or increase plasma uniformity.

Art Unit: 1763

Referring to Figure 12, and column 9, lines 41-59, Hama teaches a showerhead 152 (lattice-like shower plate) with a vertical pipe lattice 156. The pipe lattice 156 contains a supply holes 154 which are oriented downwards. Moreover, the pipe lattice 156 allows gases to fully and uniformly cover the entire process region of the substrate. It is inherently known, that the gases will disperse in many directions from the showerhead 152, and the gases will contact the substrate obliquely or vertically. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the bipolar electrode of Otani with the pipe lattice as taught by Hama. This would fully and uniformly cover the entire process region of the substrate.

Referring to Drawings 1 and 4, and the abstract, Oyama teaches a showerhead 14 which has process gas holes 15 inclined towards a wafer 13 (process gas is obliquely incident on the surface of the substrate). The holes are inclined towards the center of the wafer 13 to obtain a uniform film. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the lattice-like shower plate of Otani in view of Hama with gas holes of Oyama. When the gas holes are inclined, a uniform film is formed on the wafer.

Referring to the solution, Omi teaches a method of forming a passivated film of aluminum oxide on the surface of stainless steel (aluminum) pipes. The passivated film made of aluminum oxide is used to protect the metal pipes from corrosion. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the lattice shower plate of Otani in view of Hama with the passivated aluminum oxide coated metal pipes as taught by Omi. This would provide excellent corrosion resistance at a low price.

Art Unit: 1763

6. Claims 4-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

7. Claims 13-20 are allowed.

Response to Arguments

8. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1763

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC



October 31, 2002



GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700